

Environmental Consultants

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<http://www.scseng.com>**SCS ENGINEERS**

December 8, 1999

File No. 0199164.00

Ms. Claudette Earl  
Earl Manufacturing Company, Inc.  
11862 Burke Street  
Santa Fe Springs, CA 90670  
Telephone 562-945-2971  
Copy via facsimile 562-945-2974

Subject: Summary of Groundwater Monitoring Activities; Earl Manufacturing, 11862  
Burke Street, Santa Fe Springs

Dear Ms. Earl:

This letter constitutes SCS Engineers' (SCS) report of groundwater monitoring well installation, development, and sampling in the immediate vicinity of the former underground storage tank (UST). The purpose of the single monitoring well was to assess potential impacts to groundwater in a "worst case" location.

Groundwater Monitoring Well Installation and Development

A hollow-stem auger drill rig, operated by Layne Christensen Company, was mobilized to the site under SCS oversight to install one well to a depth of 42 feet below ground surface (bgs) in an area immediately south of the main building (Figures 1, Appendix A). Soil samples were collected at 5-foot intervals for visual examination using a Modified California Sampler (split spoon). A copy of the boring log is included in Appendix B. The well was constructed of 2-inch diameter Schedule 40 PVC, screened with 0.010-inch wide factory slotted Schedule 40 PVC from approximately 22 to 42 feet bgs. A filter pack of No. 2/16 sand was placed in the annular space surrounding the screen. The sand was filled to 3-feet above the top of the screen. A 3-foot thick bentonite seal was placed above the filter pack, followed by bentonite cement grout to the surface. A flush-mounted traffic-rated locking well box was cemented in place above the casing. Figure 3 (Appendix A) provides an example of typical well construction details.

Following well construction, the bentonite-cement grout was allowed to cure for 8 days. After this time period, the well was developed to remove the finer material from the formation and filter pack surrounding the well. Development consisted of a combination of surging and bailing which continued until relatively clear water (i.e. few observable fine materials) was obtained. First, the well was bailed to remove standing water and any sediment within the casing. A surge block was used to force water into and out of the well screen. This removed fine sediment surrounding the well screen and improved the flow characteristics of the well. The surge block and bailer was steam cleaned prior to being introduced to the well.

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After surging, the well was bailed again until the water removed was relatively free of sediment. Soil cuttings and development water were drummed and left on site.

#### Groundwater Sampling and Analysis

Prior to initiating sampling activities, SCS measured the static water level using a water level indicator. The water level indicator was cleaned prior to measuring the water level in the well using a non-phosphate biodegradable detergent and fresh tap water, followed by a distilled or deionized water rinse. Depth to water, water surface elevation, and purging information was recorded on a field data sheet which is included in Appendix C of this document.

The well to be sampled, MW-1, was purged of a minimum of 3 casing volumes using a dedicated polyethylene disposable bailer, prior to sample collection. During purging, measurements of temperature, specific conductivity, turbidity, and pH were recorded in well sampling logs to ensure stabilization of groundwater conditions before sampling.

After purging, groundwater samples were collected by using a dedicated polyethylene disposable bailer attached to a nylon cord. Groundwater samples were placed in appropriate pre-cleaned containers obtained from the analytical laboratory. For this investigation groundwater samples were collected in 40 ml glass VOA bottles. New disposable latex sample gloves were used during sample collection. Samples were labeled and immediately placed in a refrigerated cooler for transport to Advanced Technology Laboratory, a state-certified analytical laboratory, where one sample was analyzed for volatile organic compounds by EPA Method 8260 within the appropriate holding time. Laboratory results and a copy of the chain-of-custody form are included in Appendix D.

#### Laboratory Results

Analysis indicates a concentration of tetrachloroethene (PCE) of 13,700 ug/l (micrograms per liter; equivalent to parts per billion) and of trichloroethene (TCE) of 1,730 ug/l. In addition, trace concentrations of 1,1,1-trichloroethane and 1,1-dichloroethene were detected. Maximum contaminant levels specified by State regulations for drinking water are 5 ug/l for either PCE or TCE.

#### Interpretation of Results

Both PCE and TCE were detected in groundwater in concentrations that would be considered significantly elevated by the Regional Water Quality Control Board (RWQCB).

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Although detectable concentrations of PCE and TCE might be expected in groundwater in many areas of Santa Fe Springs, and although low concentrations (up to several tens of parts per billion) might be considered "background" in shallow groundwater in some areas of the city, the concentrations detected in the sample collected are significantly higher than what might be expected as a background level. In addition, the fact that PCE was detected previously in soil samples from the UST area is likely to be interpreted by RWQCB staff as indicating the UST was the source of the PCE in groundwater.

#### Conclusions

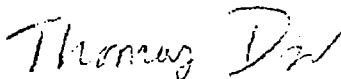
Based on the detected PCE and TCE in groundwater, it appears unlikely that closure will be granted by the RWQCB in the near future. Prior to considering closure, it seems likely that RWQCB would request installation of additional wells (perhaps one upgradient and one further downgradient or to the west) and sampling of all wells once per calendar quarter for a minimum of one year. Additional investigative activities might also be requested.

If you have any questions, please feel free to call.

Very truly yours,



Kenneth H. Lister, Ph.D., C.E.G.  
Project Manager



Thomas Dong, R.E.A.  
Vice President  
SCS ENGINEERS

Enclosures

**APPENDIX A**

**FIGURES**

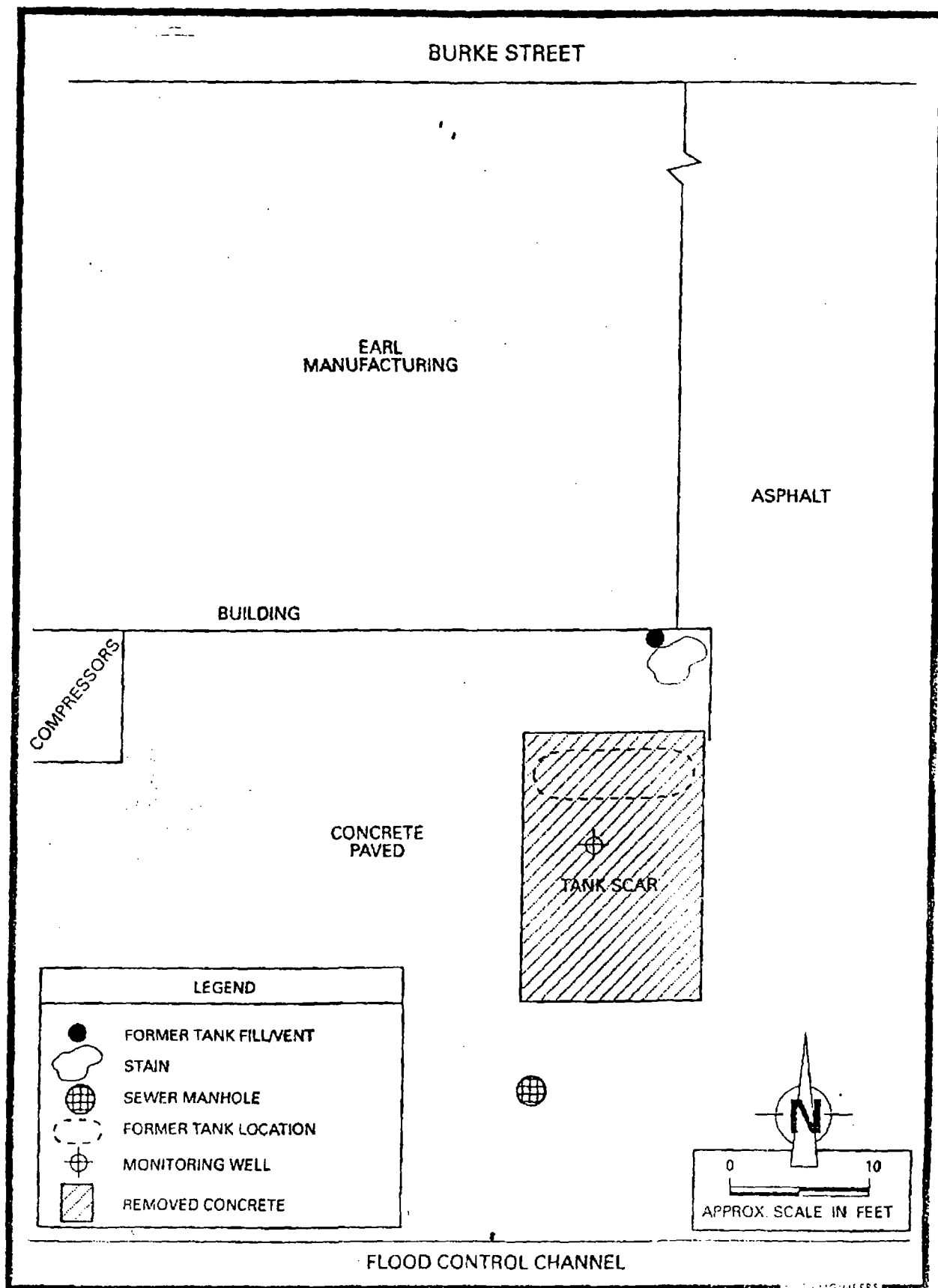


Figure 1. Monitoring Well Location, Earl Manufacturing, Santa Fe Springs, CA.

**APPENDIX B**  
**BORING/WELL LOG**

3711 Long Beach Boulevard, 9th Fl.  
Long Beach, California 90807-3315

**BORING NUMBER: MW-1**

Page 1 of 1

**Earl Mfg.**  
**11862 Burke**  
**Santa Fe Springs, CA**

**JOB NUMBER: 01199164.00**

REMARKS:

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	QVM (ppm)	USCS Soil Class.			
0	0								Flush-mount, Traffic-rated Well Box
1	5					ML		Dark brown clayey silt, dry, slight odor	Concrete
2									
3	10					CL		Medium brown silty clay, slightly moist, no odor	Cement bentonite grout
4									
5	15			2 4 8		ML		Medium brown clayey silt, very slightly moist, no odor	2" dia. sch. 40 PVC blank
6	20			4 12 12		ML		Light brown-gray silt with some fine to medium-grained sand, very slightly moist, no odor	Bentonite
7									#2-16 sand
8	25			6 10 15		SP		Light brown fine to medium-grained sand, moist, no odor	
9	30			14 37 50		SW		28' - water first encountered Light brown well-graded fine to coarse-grained sand (predominantly coarse) with some silt and gravel, wet, no odor	
10									0.0' 0" slotted 2" sch. 40 PVC
11	35			11 16 20		SW		Light brown medium to coarse-grained sand, some fine sand and few cobbles (gneiss-granitic), well-graded	
12	40			6 13		ML		Medium brown clayey silt, dry to slightly moist	
13						SW		Light brown sands, some cobbles, well-graded, wet	
14	45			21 7 16		ML		Light brown silt, slightly clayey, moist, no odor	Endcap
15								Medium brown clayey silt, moist	

Drilling Company: Layne Cristensen

Drilling Method: Hollow Stem Auger

Logged By: C. Farrell

Sampling Method: California split spoon

Date Started: 11/10/99

Date Ended: 11/10/99

Boring Diameter: 2 in.

Depth to Water: 28.0 ft.

Total Depth: 45.0 ft.

**APPENDIX C**  
**FIELD SAMPLE SHEET**



## WELL SAMPLING RECORD

SCS  
ENGINEERS

1111 Long Beach Blvd  
Long Beach  
Long Beach, CA  
90801-2119  
(310) 499-8568  
FAX (310) 497-8098

## PROJECT INFORMATION

PROJECT EARL MFG.  
JOB NUMBER 0119916400  
PERSONNEL LM

DATE 11/22/99  
WEATHER/TEMP Sunny 65°  
SITE CONDITIONS hot

## MONITORING WELL DATA

WELL NUMBER MW-1  
DEPTH OF WELL 43  
WATER HEIGHT 15.96  
GALLONS/FOOT .16  
WATER VOLUME 2.5 x 3 = 7.5

TIME OF MEASUREMENT 9:30  
SCREENED INTERVAL 23-43  
REFERENCE POINT  
DEPTH TO WATER 28.04  
80% RECHARGE LEVEL 25.04 at time of sample

SHEEN YES (NO)  
ODOR NO

FREE PRODUCT YES (NO)  
STATIC THICKNESS  
TRUE THICKNESS

## PURGING DATA

EQUIPMENT Disposable bailer  
TUBING (TYPE)  
PURGE START 9:45  
PURGING RATE

PURGING DEPTH 23  
PURGE END 10:15  
PURGED VOL (GALS) 7.5

TIME	VOLUME (GAL)	EC	pH	TURBIDITY (NTUs)	TEMP (F)	COMMENT
9:55	2.5	1.81	6.89	2999	20.1	cloudy, colorless
10:05	5	1.76	7.21	2999	20.5	"
10:15	7.5	1.75	7.28	2999	19.9	"
11:20	Sample	1.71	7.21	135	21.0	fl cloudy, colorless

OTHER COMMENTS: Water is cloudy + Lt. brown in color. There is no sheen or odor. I will allow water to settle + recharge before samples are taken.

## SAMPLING INFORMATION

PUMP (TYPE) -

BAILER (TYPE) Disposable

SAMPLE ID	CONTAINER	TIME	ANALYSIS/COMMENTS
<del>8260</del> MW-1A	VOA		8260
MW-1B	VOA		ARCURE

**APPENDIX D**  
**ANALYTICAL RESULTS**

December 6, 1999

ELAP No. 1838

SCS Engineers  
3711 Long Beach Blvd. 9th Floor  
Long Beach, CA 90807

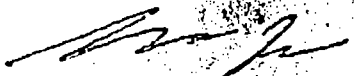
ATTN: Cristi Farell

Client's Project: Earl Mfg., 01199164.00  
Lab No.: 39872-001/002

Enclosed are the results for sample(s) received by Advanced Technology Laboratories and tested for the parameters indicated in the enclosed chain of custody.

Thank you for the opportunity to service the needs of your company. Please feel free to call me at (562) 989 - 4045 if I can be of further assistance to your company.

Sincerely,



Cheryl De Los Reyes  
Technical Operations Manager  
CDR/ra

Enclosures

This cover letter is an integral part of this analytical report.

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purpose without authorization is prohibited.



Advanced Technology  
Laboratories

1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Client: SCS Engineers  
Attn: Cristi Farrell

Pg. 1 of 2

Client's Project: Earl Mfg., 01199164.00

Date Received: 11/22/99

Matrix: WATER

Units: UG/L

Date Amended: 12/02/99

EPA Method 8260B

Lab No.:	M.B.LANK	39872-001											
Client Sample I.D.:	--	MW-1A											
Date Sampled:	--	11/22/99											
QC Batch #:	T8260W114	T8260W114											
Date Analyzed:	11/24/1999	11/25/1999											
Analyst Initials:	YM	YM											
Dilution Factor:	1	1											
ANALYTE	MDL	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results
benzene	5	5	ND	5	ND								
bromobenzene	5	5	ND	5	ND								
bromodichloromethane	5	5	ND	5	ND								
bromoform	5	5	ND	5	ND								
bromomethane	5	5	ND	5	ND								
n-butylbenzene	5	5	ND	5	ND								
sec-butylbenzene	5	5	ND	5	ND								
tert-butylbenzene	5	5	ND	5	ND								
carbon tetrachloride	5	5	ND	5	ND								
chlorobenzene	5	5	ND	5	ND								
chloroethane	5	5	ND	5	ND								
chloroform	5	5	ND	5	ND								
chloromethane	5	5	ND	5	ND								
2-chlorotoluene	5	5	ND	5	ND								
4-chlorotoluene	5	5	ND	5	ND								
dibromochloromethane	5	5	ND	5	ND								
1,2-dibromo-3-chloropropane	5	5	ND	5	ND								
1,2-dibromoethane	5	5	ND	5	ND								
dibromomethane	5	5	ND	5	ND								
1,2-dichlorobenzene	5	5	ND	5	ND								
1,3-dichlorobenzene	5	5	ND	5	ND								
1,4-dichlorobenzene	5	5	ND	5	ND								
dichlorodifluoromethane	5	5	ND	5	ND								
1,1-dichloroethane	5	5	ND	5	ND								
1,2-dichloroethane	5	5	ND	5	ND								
1,1-dichloroethene	5	5	ND	5	6.3								
cis-1,2-dichloroethene	5	5	ND	5	ND								
trans-1,2-dichloroethene	5	5	ND	5	ND								
1,2-dichloropropane	5	5	ND	5	ND								
1,3-dichloropropane	5	5	ND	5	ND								
2,2-dichloropropane	5	5	ND	5	ND								
1,1-dichloropropene	5	5	ND	5	ND								
ethylbenzene	5	5	ND	5	ND								
hexachlorobutadiene	5	5	ND	5	ND								

MDL = Method Detection Limit  
ND = Not Detected (Below DLR)  
DLR = MDL x Dilution Factor  
NA = Not Analyzed

The cover letter is an integral part of this analytical report.



Advanced Technology  
Laboratories

1510 E. 33rd Street, Signal Hill, CA 90807 Tel: 562 989-4015 Fax: 562 989-4040

Client:  
Attn:

SCS Engineers  
Cristi Farrell

Pg. 2 of 2

Client's Project:

Earl Mfg., 01199161 00

Date Received:

11/22/99

Matrix:

WATER

Units:

UG/L

Date Analyzed:

12/02/99

EPA Method 8260B

Lab No.:		M.BLANK		39872-001							
Client Sample I.D.:		--		MW-1A							
ANALYTE	MDL	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results
isopropylbenzene	5	5	ND	5	ND						
4-isopropyltoluene	5	5	ND	5	ND						
methylene chloride	5	5	ND	5	ND						
naphthalene	5	5	ND	5	ND						
n-propylbenzene	5	5	ND	5	ND						
styrene	5	5	ND	5	ND						
1,1,1,2-tetrachloroethane	5	5	ND	5	ND						
1,1,2,2-tetrachloroethane	5	5	ND	5	ND						
tetrachloroethene	5	5	ND	1000	13700*						
toluene	5	5	ND	5	ND						
1,2,3-trichlorobenzene	5	5	ND	5	ND						
1,2,4-trichlorobenzene	5	5	ND	5	ND						
1,1,1-trichloroethane	5	5	ND	5	8.3						
1,1,2-trichloroethane	5	5	ND	5	ND						
trichloroethene	5	5	ND	1000	1730*						
trichlorofluoromethane	5	5	ND	5	ND						
1,2,3-trichloropropane	5	5	ND	5	ND						
1,2,4-trimethylbenzene	5	5	ND	5	ND						
1,3,5-trimethylbenzene	5	5	ND	5	ND						
vinyl chloride	5	5	ND	5	ND						
o-xylene	5	5	ND	5	ND						
m-p-xylene	5	5	ND	5	ND						

Matrix Spike and Matrix Spike Duplicate Report #

Lab No.:	M.BLANK		BS		BSO					
QC Batch Number:	T8250W114		T8250W114		T8250W114					
ANALYTE	DLR	Results	Results	%Rec.	Results	%Rec.	RPD %	Rec. Limits	RPD Limits	Amount
1,1-dichloroethene	5	ND	59	117	57	114	3	61-151	21	50
benzene	5	ND	63	126	58	117	7	73-131	15	50
trichloroethene	5	ND	48	95	44	88	8	72-128	15	50
toluene	5	ND	58	112	53	106	6	63-140	14	50
chlorobenzene	5	ND	56	111	52	104	7	81-115	11	50

MDL = Method Detection Limit

ND = Not Detected (Below DLR)

DLR = MDL x Dilution Factor

NA = Not Analyzed

\* = Dilution factor is 200. Sample analyzed on 12/02/1999.

Approved/Reviewed By:

*C. Persaud*

Date: 12/03/99

Compton Persaud

Department Supervisor

# Original sample result may be below detection limit. The result was used for % Recovery calculation purposes only.  
The cover letter is an integral part of this analytical report.



Advanced Technology  
Laboratories

15101 - 15101 Street - Signal Hill, CA 90804 TEL: 562-989-4045 FAX: 562-989-4040

